

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
29 April 2004 (29.04.2004)

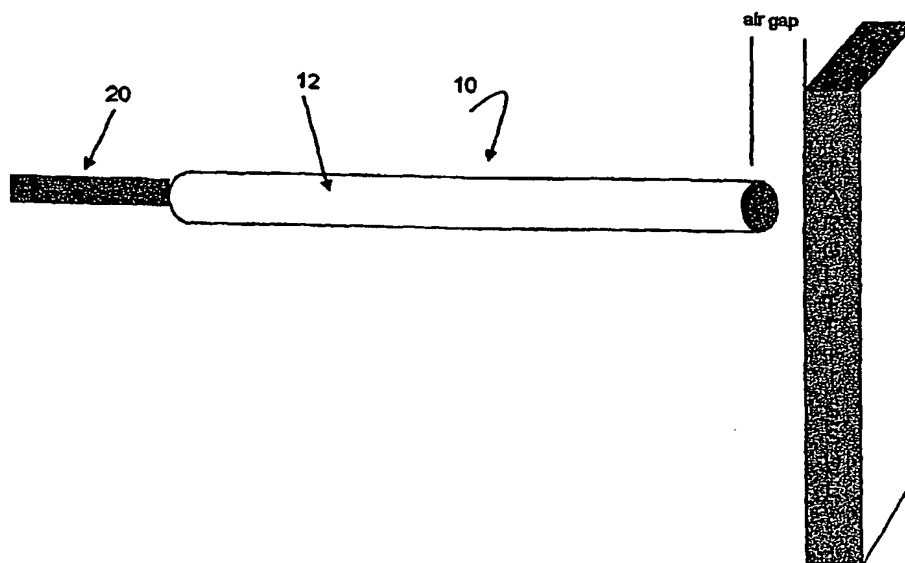
PCT

(10) International Publication Number  
**WO 2004/034895 A1**

- (51) International Patent Classification<sup>7</sup>: **A61B 5/00** (74) Agent: **F B RICE & CO**; 605 Darling Street, Balmain, NSW 2041 (NZ).
- (21) International Application Number: **PCT/AU2003/001379**
- (22) International Filing Date: 17 October 2003 (17.10.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
2002952144 17 October 2002 (17.10.2002) AU
- (71) Applicant (for all designated States except US): **PERFUSION DIAGNOSTICS PTY LTD** [AU/AU]; 67 Coolawin Road, Northbridge, New South Wales 2063 (AU).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **STEPHENS, Frederick, Richard, Neason** [AU/AU]; 67 Coolawin Road, Northbridge, New South Wales 2063 (AU). **KESTEVEN, Scott** [AU/AU]; 67 Coolawin Road, Northbridge, New South Wales 2063 (AU). **HARRIS, Peter** [AU/AU]; 67 Coolawin Road, Northbridge, New South Wales (AU).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR MEASURING TISSUE PERFUSION



(57) Abstract: Apparatus for measuring microcirculatory flow of a target tissue without the necessity for direct contact of a probe is disclosed. The apparatus includes a probe (10) arranged to generate a pulsed source of infrared light (16) and a matched infrared sensor (18) which transduces variations in the reflected light to an electric signal and a signal processor which compares the signal at a first time when the pulsed light source is on with a second time when the pulsed light is off. The signal is processed to reduce or ameliorate the effect of the ambient light in the signal and the Tissue Perfusion Index (TPI) is then calculated. Without the need to contact tissue, the apparatus can be used to measure the TPI for chronic ulcers on the extremities, the surface of the retina, the vascular pulp within a tooth or the surface of internal organs accessed by fiber optic or endoscopic means.



WO 2004/034895 A1